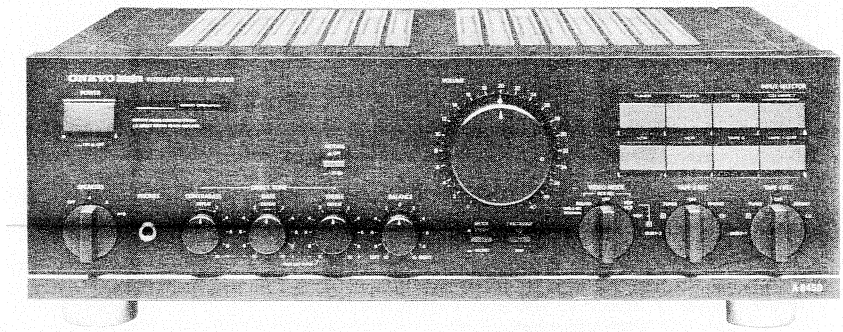
SERIAL No. 3272

ONKYO® SERVICE MANUAL

Integrated Stereo Amplifier
MODEL A-8450



Silver and Black models

UG	220V AC, 50Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

TABLE OF CONTENTS

Specifications	2
Block diagram	3
Adjustment procedures	4
Precautions	4
Packing procedures	5
Chassis exploded view	6
Exploded view parts list	7
Front panel facilities	8
System connections	8
IC block diagram	9
Printed circuit board parts list	10
Printed circuit board view	13
Schematic diagram	17

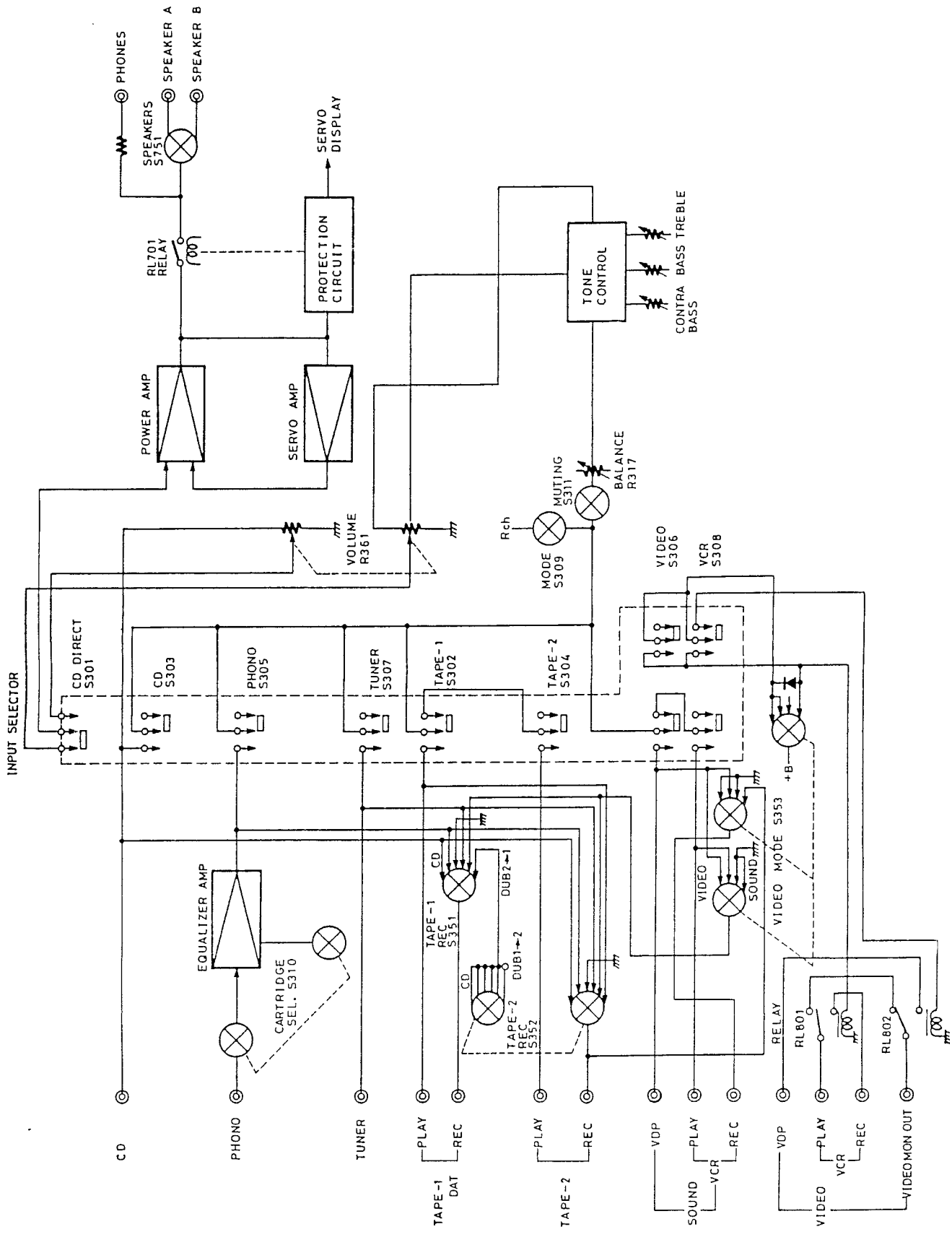
ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

Continuous Power Output:	2 x 120 watts at 4 ohms, 1 kHz (DIN) 2 x 90 watts at 8 ohms, 1 kHz (DIN) 80 watts per channel, min. RMS, at 8 ohms, both channels driven from 20 Hz to 20 kHz, with no more than 0.008% Total harmonic distortion.	
Dynamic Power:	2 x 210 watts at 2 ohms, 2 x 167 watts at 4 ohms	
Total Harmonic Distortion	0.008% at rated power 0.008% at 1 watt output	
Intermodulation Distortion:	0.005% at rated power	
Damping Factor:	50 at 8 ohms	
Input Sensitivity/ Impedance	Phono (MM):	2.5 mV/50 kohms
	Phono (MC):	160 µV/220 ohms
	CD, DIRECT:	150 mV/50 kohms
	TUNER:	150 mV/50 kohms
	Tape Play:	150 mV/50 kohms
	VCR Play:	150 mV/50 kohms
	VDP Play:	150 mV/50 kohms
Output Level/Impedance:	Tape Rec:	150 mV/1.5 kohms (Phono)
Phono Overload:	Phono (MM):	200 mV RMS. at 1 kHz, 0.015% THD.
Tone Control (Vol −20 dB):	CONTRABASS:	+10 dB at 20 Hz
	BASS:	±10 dB at 70 Hz
	TREBLE:	±8 dB at 20 kHz
High Cut:	6 kHz (6 dB/Octave) (TREBLE min.)	
Frequency Response:	CD, Tuner:	2 Hz −50 kHz (+0, −1 dB)
RIAA Deviation:	Phono (MM):	±0.3 dB 20 Hz −20 kHz
Signal to Noise Ratio (IHF-A):	Phono (MM):	93 dB (5 mV input)
	Phono (MC):	74 dB (0.5 mV input)
	CD DIRECT:	107 dB
Muting:	−20 dB	
Power Supply:	European models:	AC220V, 50 Hz
Dimensions (W x H x D):	435 x 147 x 388 mm 17-1/8" x 5-13/16" x 15-5/16"	
Weight:	11.2 kg, 24.7 lbs	

Specifications and features are subject to change without notice.

BLOCK DIAGRAM



ADJUSTMENT PROCEDURES

1. Preparations
   1) Leave the machine in a normal condition parallel to the work bench, maintaining a clearance of 15mm from the bottom for air circulation.
   2) Set the level to minimum with no load and no signal.
   3) When making the adjustment, there must be no breeze blowing from the outside.

2. Adjustment of idling current
   1) Turn ON the power switch, and leave the unit as is for about 5 minutes.
   2) Adjust the semi-fixed resistor R531 (R532) so that the voltage between the terminals V_{CT} and I_{ID} of the printed circu board NAAF-2983 is 7.5mV.

3. Operating check of protection circuit
   1) When the power switch is turned ON.
   - After about 5 second, relay RL701 of the NAAF-2983 printed circuit board go ON.
   - Operation indicator lights.
   2) When the power is turned OFF.
   - Immediately a relay go OFF.
   3) With no load, when ±200mV DC is CD input, the speaker relay go OFF.

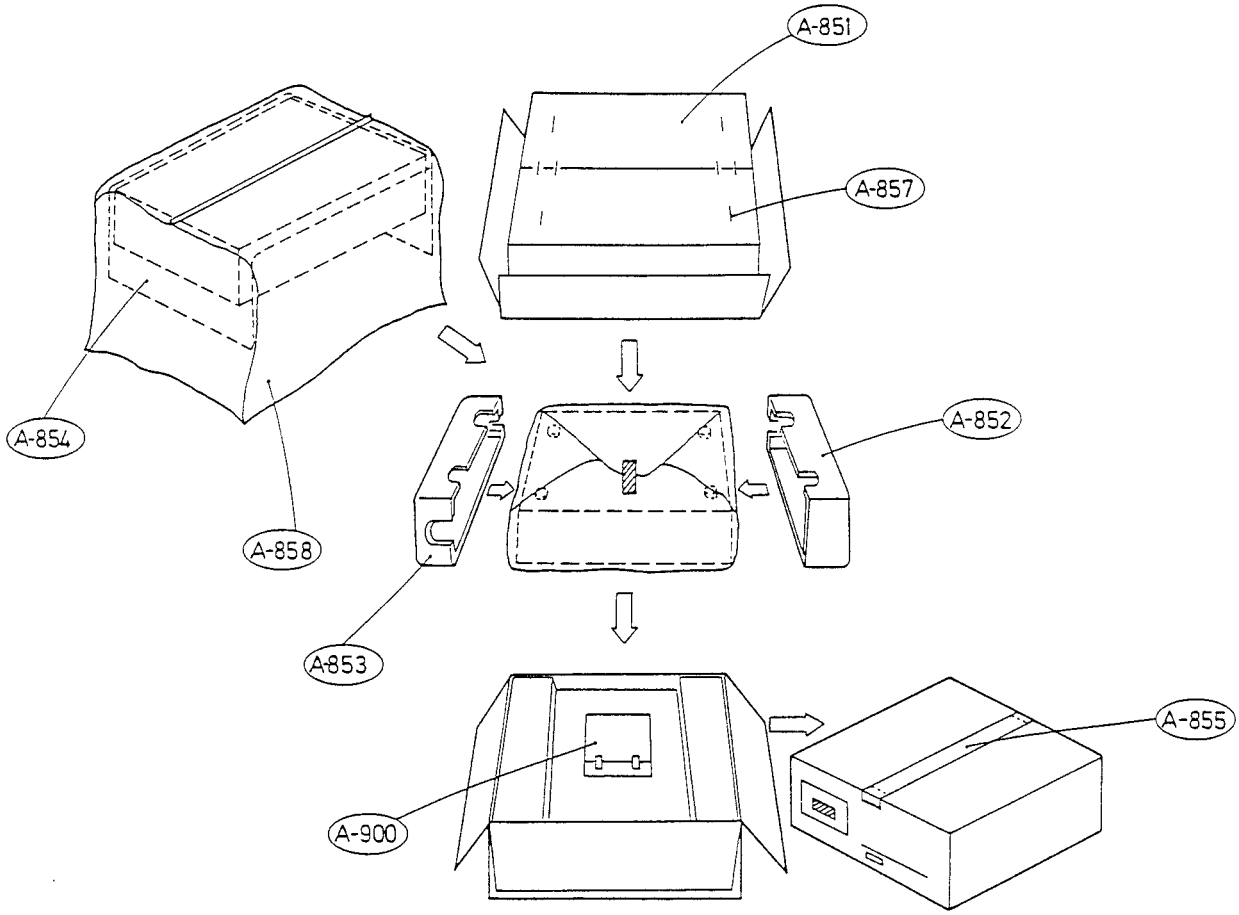
Caution: During this test, there should be absolutely no load connected and the load terminals must not be shorted.

PRECAUTIONS

1. Replacing the fuses
   For continued protection against risk fire, replace only with same type and same rating fuse.

CIRCUIT NO.	PART NO.	DESCRIPTION
F902	252076 or	3.15A-SE-EAK Primary fuse
	252076CC	3.15A-SE-EAK Primary fuse

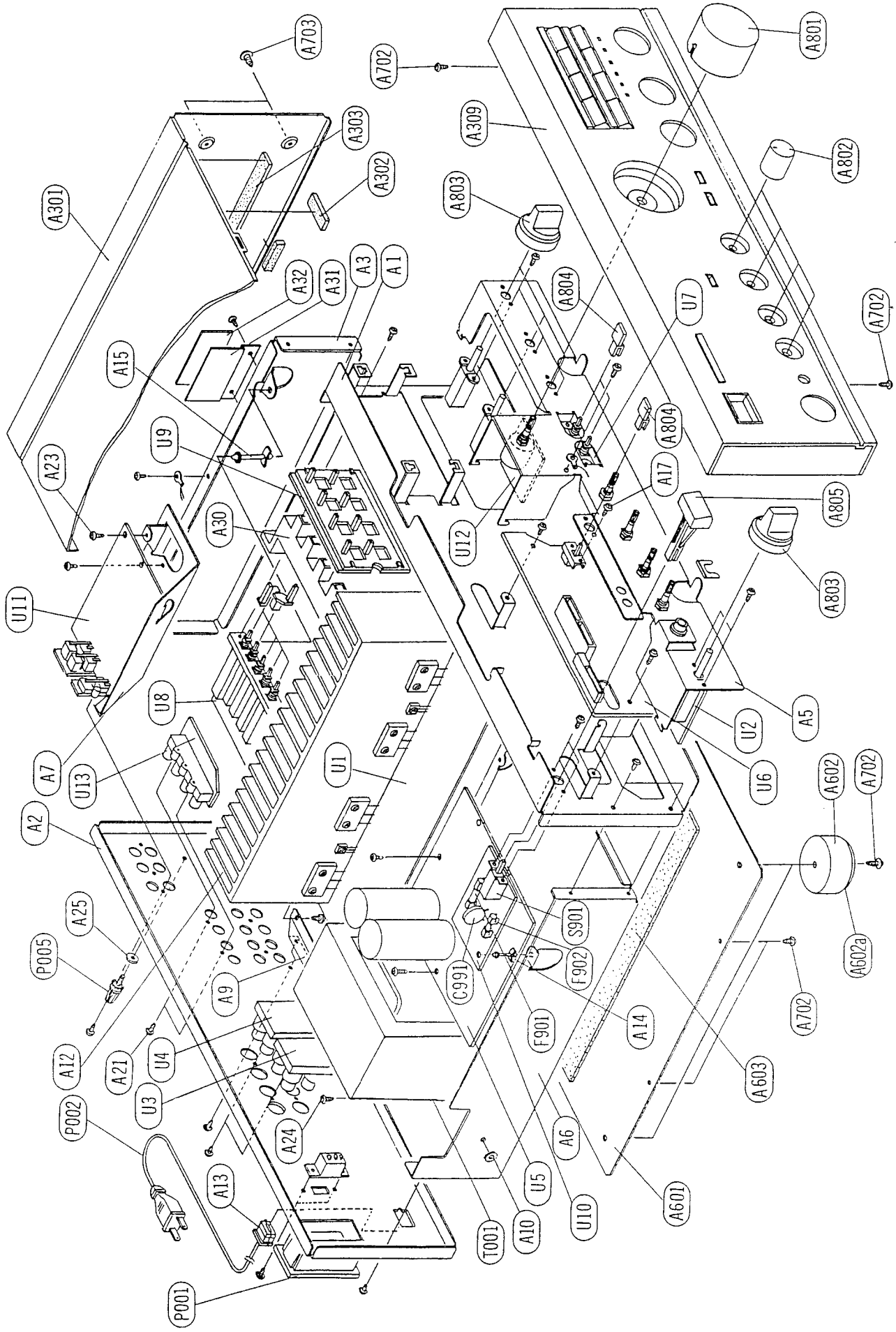
PACKING PROCEDURES



REF. NO.	PART NO.	DESCRIPTION
A851	29051537	MASTER CARTON BOX
A851	29051539	MASTER CARTON BOX [BLACK]
A852	29091159	PAD LEFT
A853	29091160	PAD RIGHT
A854	29095012-1	SHEET 800X500
A855	260012	DAMPLON TAPE W50 BROWN
A857	282301	STAPLE 16H
A858	29100038A	POLY BAG 720X950
	29100094	POLY BAG (WARRANTY CARD)
A900		ACCESSARY BAG
	29341156	INSTRUCTION MANUAL
	29365020	WARRANTY CARD
	29100006A	POLY BAG 350X250

NOTE [BLACK] : ONLY BLACK MODEL

CHASSIS-EXPLODED VIEW



CHASSIS-EXPLODED VIEW-PARTS LIST

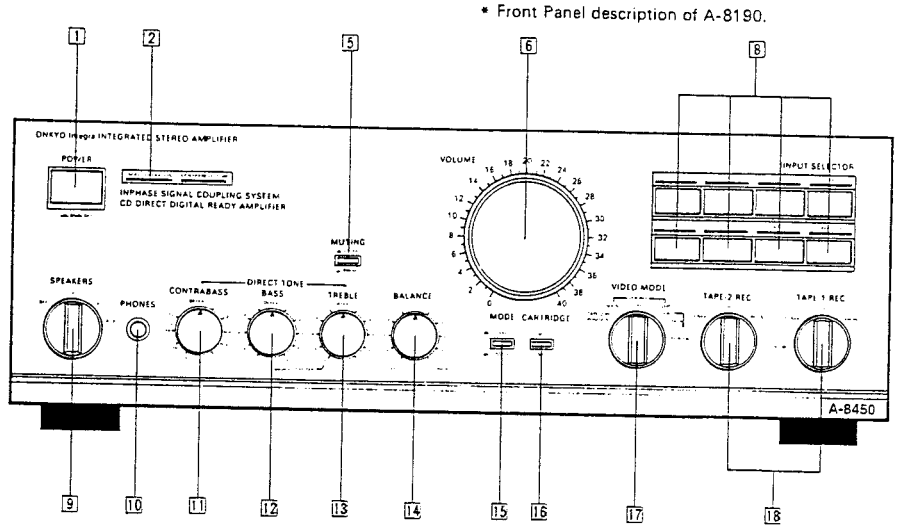
REF. NO.	PART NO.	DESCRIPTION
A1	27110361	FRONT BRACKET
A2	27121006A	BACK PANEL
A3	27115224	SIDE BRACKET
A5	27130473	BRACKET (F)
A6	27130474	BRACKET (L)
A7	27130450	BRACKET (EQ)
A8	28140730	CUSHION
A9	27141084A	BRACKET (H)
A10	27270212	SPACER
A11	27270213	SPACER (PT)
A12	27160203	HEATSINK
A13	27300750	BUSHING (CORD)
A14	27190011	HOLDER LCBS-6NS
A15	27190532	HOLDER KGLS-7S
A17	82143006	PAN HEAD SCREW, 3P+6FNBC
A21	834430108	TAP-TIGHT SCREW, 3TTS+10BBC
A23	831130088	TAP-TIGHT SCREW, 3TTW+8B
A24	830440109	TAP-TIGHT SCREW, 4TTC+10CBC
A25	87613010	WASHER, W3X10F
A30	27273059A	JOINT ASS'Y
A31	27150236	SHIELD PLATE
A32	28175140	INSULATING PLATE
A301	28184365	TOP COVER [BLACK]
A301	28184364	TOP COVER
A302	28140020	CUSHION
A303	28140695	CUSHION
A309	1A027121	FRONT PANEL [BLACK]
A309	1A028121	FRONT PANEL
A601	27170234B	BOTTOM BOARD
A602	27175153	LEG ASS'Y
(A602a)	28140747	CUSHION
A701	834430088	TAP-TIGHT SCREW, 3TTS+8BBC
A702	838440089	TAP-TIGTH SCREW, 4TTB+8CBC
A801	28323027	KNOB (VOL) [BLACK]
A801	28323028	KNOB (VOL)
A802	28323029	KNOB (TONE) [BLACK]
A802	28323030	KNOB (TONE)
A803	28322700	KNOB (SP) [BLACK]
A803	28323036	KNOB (SP)
A804	28322701	KNOB (PUSH) [BLACK]
A804	28323037	KNOB (PUSH)
A805	28322702A	KNOB (POW) [BLACK]
A805	28323034	KNOB (POW)
⚠T001	2300231	POWER TRANSFORMER, NPT-962G
⚠S901	25035398	POWER SWITCH, NPS-111-L362P
⚠P002	253130A or	AC CORD, AS-CEE or
	253128B	AC CORD, AS-CEE
P005	25060044	TERMINAL
⚠F902	252076 or	FUSE, 3.15A-SE-EAK
	252076CC	FUSE, 3.15A-SE-EAK
⚠F902a	25050065	FUSE HOLDER, YSH403T
⚠C991	3500065A	0.01μF, AC 400V/125V, CAPACITOR (IS)
Q517, Q518	2212864 or	2SC3419 Y or
	2212863	2SC3419 O
Q609, Q610	2201803 or	2SC3857 O or
	2201806 or	2SC3857 P or
	2201804	2SC3857 Y
Q611, Q612	2201793 or	2SA1493 O or
	2201796 or	2SA1493 P or
	2201794	2SA1493 Y
U1	1A028583-1B	NAAF-2983-1B, REC.SELECTOR AND POWER AMPLIFIER CIRCUIT PC BOARD ASS'Y
U2	1A026584-1	NASW-2984-1, SPEAKER SWITCH PC BOARD ASS'Y
U3	1A028585-1A	NAETC-2985-1A, SPEAKER TERMINAL PC BOARD ASS'Y
U4	1A028586-1A	NAETC-2986-1A, SPEAKER TERMINAL PC BOARD ASS'Y
U5	1A026588-1	NAPS-2988-1, POWER SUPPLY PC BOARD ASS'Y
U6	1A026589-1	NASW-2989-1, MUTING SWITCH PC BOARD ASS'Y
U7	1A026590-1	NAAF-2990-1, TONE CONTROL CIRCUIT PC BOARD ASS'Y
U8	1A026591-1	NASW-2991-1, INPUT SELECTOR SWITCH PC BOARD ASS'Y
U9	1A026592-1	NADIS-2992-1, DISPLAY LED PC BOARD ASS'Y
U10	1A026593-1A	NASW-2993-1A, POWER SWITCH PC BOARD ASS'Y
U11	1A028594-1A	NAAF-2994-1A, EQUALIZER CIRCUIT PC BOARD ASS'Y
U12	1A026595-1	NAAF-2995-1, VOLUME CONTROL PC BOARD ASS'Y
U13	1A026596-1	NAETC-2996-1, VIDEO TERMINAL PC BOARD ASS'Y

NOTE [BLACK] : ONLY BLACK MODEL

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

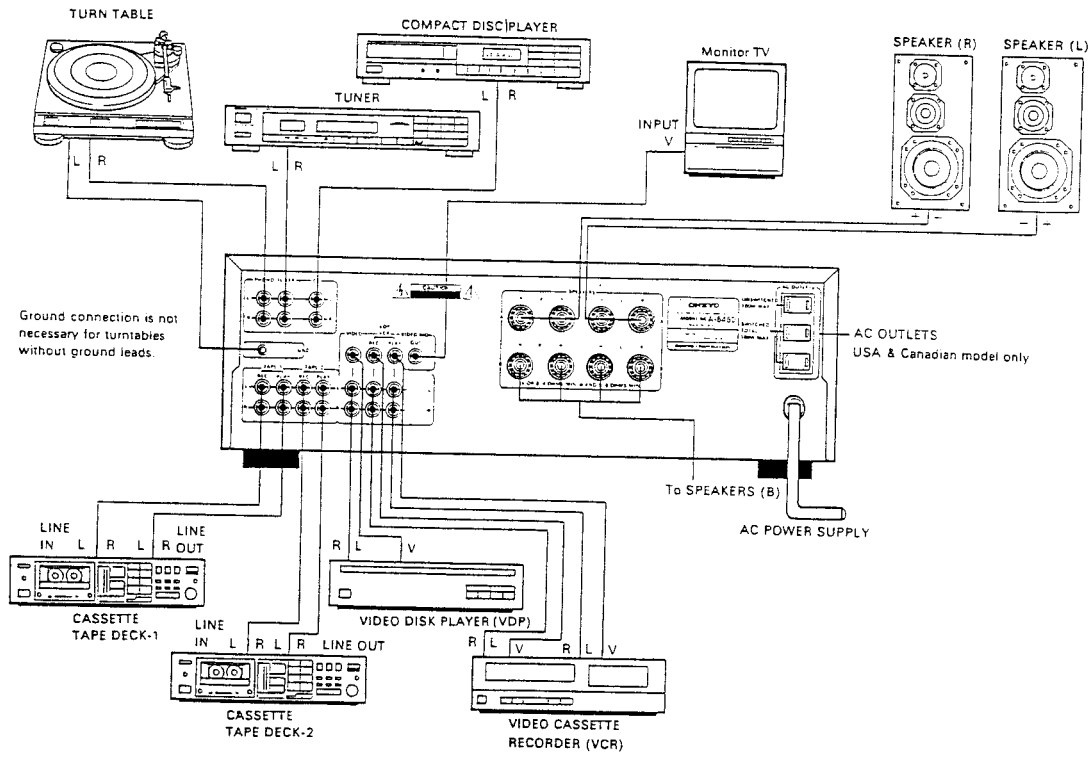
FRONT PANEL FACILITIES

* Front Panel description of A-8190.



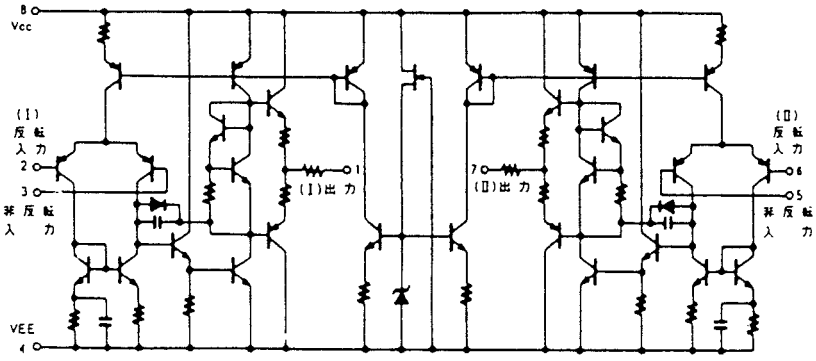
1. Power switch (POWER)
2. Servo operation indicator (SERVO OPERATION)
5. Muting switch (MUTING)
6. Volume control (VOLUME)
8. Input selector switches and indicator (INPUT SELECTOR)
   CD DIRECT, CD, PHONO, TUNER, TAPE-1/DAT, TAPE-2, VDP, VCR
9. Speaker selector (SPEAKERS)
   OFF, A, B, A+B
10. Headphone jack (PHONES)
11. Contra bass (CONTRA BASS)
12. Bass control (BASS)
13. Treble control (TREBLE)
14. Balance control (BALANCE)
15. Mode selector (MODE)
    STEREO, MONO
16. Cartridge selector (CARTRIDGE)
    MC, MM
17. Video mode switch (VIDEO MODE)
    SOUND, OFF, VDP-VCR, VDP
18. Recording source selectors (TAPE-1 REC, TAPE-2 REC)
    TAPE-1 DVB 2► 1, V, TUNER, OFF, PHONO, CD
    TAPE-2 DVB 1►2, V, TUNER, OFF, PHONO, CD

SYSTEM CONNECTIONS

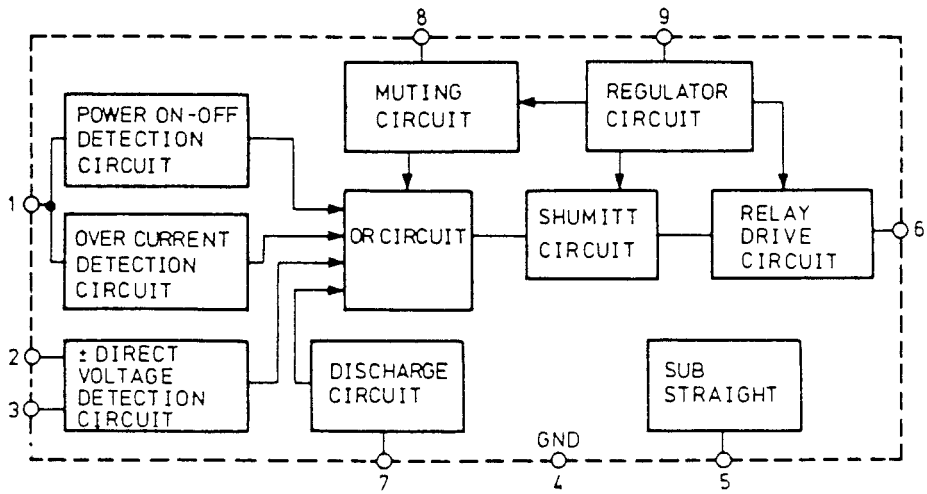


IC BLOCK DIAGRAM

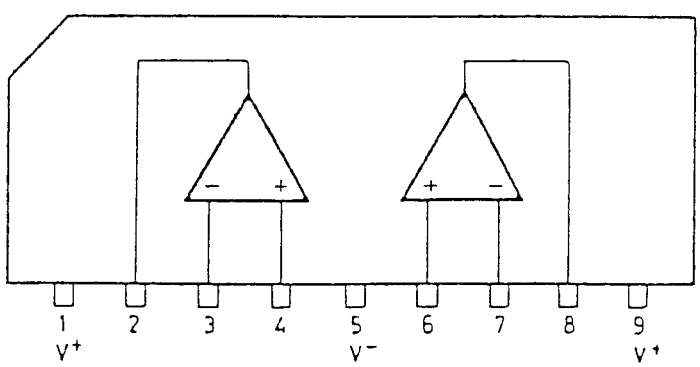
NJM-4560DX(OP Amp)



TA7317P(Protection Circuit)



NJM-4558SE(OP Amp)



PRINTED CIRCUIT BOARD PARTS LIST

REC. SELECTOR AND POWER AMPLIFIER CIRCUIT PC BOARD (NAAF-2983-1B)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q519, Q520	222942	NJM4558SE
Q701	222584	TA7317P
	Transistors	
Q501, Q502	2212805 or	2SK389 GR or
	2212806 or	2SK389 BL or
	2212807	2SK389 V
Q503~Q506, Q615	2211733 or	2SC1845 E or
Q616	2211732	2SC1845 F
Q507, Q508	2211515 or	2SA995 F or
	2211516	2SA995 G
Q509, Q510, Q515	2211634 or	2SC2229 Y or
Q516, Q601, Q602	2211633	2SC2229 O
Q511, Q512	2211455 or	2SA1015 GR or
	2210803	2SA733 P
Q513, Q514, Q603	2211354 or	2SA949 Y or
Q604	2211353	2SA949 O
Q605, Q606	2200864 or	2SC2238 Y or
	2200863	2SC2238 O
Q607, Q608	2200874 or	2SA968 Y or
	2200873	2SA968 O
Q617, Q618	2211793 or	2SA992 E or
	2211792	2SA992 F
Q901	2201512 or	2SD1200 Q or
	2201513	2SD1200 R
Q902	2201502 or	2SB889 Q or
	2201503	2SB889 R
	Diodes	
D507~D510, D351 D513, D514, D704 D517~D520	223163	1SS133
D505, D506, D511 D512	225232	LTZ-R15, LED
D515, D516	4000068	VD1222
D701	223890	W01RL
D702	223145	1S2076TD
D703	2239493 or	RD6.2E B3 or
	2243163	MTZ6.2-C
D901, D902	2239754 or	RD22E-B4 or
	2243294	MTZ22-D
	Coils	
L601, L602	231134S	S-0.8E
	Capacitors	
C363~C370 C503, C504	372121014	100pF, 50V, Styrene
C501, C502	372126804	68pF, 50V, Styrene
C505, C506	354780229	2.2μF, 50V, Elect.
C509, C510	379122235	0.022μF, 50V, Film (DEW)
C511, C512	372123304	33pF, 50V, Styrene
C513~C516	354762209	22μF, 35V, Elect.
C607, C608 C613~D616	379121045	0.1μF, 50V, Film (DEW)
C609, C610	379124735	0.047μF, 50V, Film (DEW)
C701	354722219	220μF, 6.3V, Elect.
C703	354742209	22μF, 16V, Elect.
C704	354784799	0.47μF, 50V, Elect.
C706	354743319	330μF, 16V, Elect.
C707	354744719	470μF, 16V, Elect.
C708, C710	379122235	0.022μF, 50V, Film (DEW)
C713	354741019	100μF, 16V, Elect.
C901, C902	354772219	220μF, 63V, Elect.
C903, C904	354764709	47μF, 35V, Elect.
C905, C906	354754719	470μF, 25V, Elect.
C911, C912	354782219	220μF, 50V, Elect.
	Resistors	
R507, R508	441623614NF	360Ω, 1W, Metal oxide film
R523, R524	442520684F	6.8Ω, 1/2W, Metal oxide film
R525, R526	442525614F	560Ω, 1/2W, Metal oxide film
R527, R528	442524734F	47 kΩ, 1/2W, Metal oxide film
R531, R532	5210062	N06HR4.7KBD, Semi-fixed
R533, R534	442524314F	430Ω, 1/2W, Metal oxide film
R601, R602	442522224F	2.2kΩ, 1/2W, Metal oxide film
R603, R604	442522214F	220Ω, 1/2W, Metal oxide film
R607~R610	442520224F	2.2Ω, 1/2W, Metal oxide film
R615~R618	4000080	0.47Ω, 5W, Metal plate
R619, R620	441727594NF	0.75Ω, 2W, Metal oxide film
R645~R648	441621604NF	16Ω, 1W, Metal oxide film
R713	442522294F	0.22Ω, 1/2W, Metal oxide film
R721, R722	442524704F	47Ω, 1/2W, Metal oxide film
R901, R902	441623004NF	30Ω, 1W, Metal oxide film
R903, R904	442525114F	510Ω, 1/2W, Metal oxide film
	Relay	
RL701	25065316	NRL-2P7A-DC12-43
	Switches	
S351, S352	25030261	NRSM-146-15SS
S353	25030259	NRSM-164-15SS
	Terminals	
P391	25045171	NPJ-4PDBL-65
P392	25045165	NPJ-4PDBL-59
P393	25045191	NPJ-6PDBL-75
	Socket	
P501	2000551	NSAS-6P507
	Plate	
	27300877	Bus

SPEAKER SWITCH PC BOARD (NASW-2984-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R753, R754	441623914F	390Ω, 1W, Metal oxide film
	Switch	
S751	25030275	NRSM-144-15SS
	Stereo jack	
P751	25045164	HLJ-4317-01-3020

SPEAKER TERMINAL PC BOARD (NAETC-2985-1A)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C751, C753	372121024	1000pF, 50V, Styrene
	Terminal	
P751	25060110	NTM-4PDMN44

SPEAKER TERMINAL PC BOARD (NAETC-2986-1) PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C752, C754	372121024	1000pF, 50V, Styrene
	Terminal	
P752	25060110	NTM-4PDMN44

POWER SUPPLY PC BOARD (NAPS-2988-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D951~D954	22380012	HER303F
D955, D956	22380003F	1N5402F
	Capacitors	
C951~C953	375101045	0.01μF, 125V, Film (ME)
C954, C955	3504209	12000μF, 63V, Elect.
	Resistors	
R951	442525104F	51Ω, 1/2W, Metal oxide film
R961, R962	442522294F	0.22Ω, 1/2W, Metal oxide film
	Plate	
	27300732	Bus

MUTING SWITCH PC BOARD (NASW-2989-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D711	225137CG or	SEL2413E CG, LED
	225137CY or	SEL2413E CY, LED
	225137DG or	SEL2413E DG, LED
	225137DY	SEL2413E DY, LED
D713, D714	225142DX2	SEL2913K DX2, LED
	Switches	
S311, S312	25035563	NPS-122-L525
	Socket	
JL701	25050267	NSCT-3P95
	Holder	
	27190493-1	(LED-3)

TONE CONTROL CIRCUIT PC BOARD (NAAF-2990-1) PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C315, C316	379128225	8200pF, 50V, Film (DEW)
C317, C318	379125625	5600pF, 50V, Film (DEW)
C319, C320	379121025	1000pF, 50V, Film (DEW)
C321, C322	379123935	0.039μF, 50V, Film (DEW)
C325, C326	379128235	0.082μF, 50V, Film (DEW)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R317	5148107	N16RGMC250KMN25, Variable
R321	5148108	N16RGM11C219K25, Variable
R323	5144001	N16RQM11C139K176K25, Variable
R337	5148109	N16RGM11C176K25, Variable
	Switches	
S309, (S310)	25035539	NPS-142-122-L501
	Sockets	
P101, P102	2000676	NSAS-6P632

INPUT SELECTOR SWITCH PC BOARD (NASW-2991-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switches	
S301~S308	25035538	NPS-742-162-L500
	Sockets	
P301	2000564	NSAS-6P520
P303	2000607	NSAS-18P563
P351, P354	25050272	NSCT-8P100
P352	25050271	NSCT-7P99
P353, P356	25050267	NSCT-3P95
P355	25050273	NSCT-9P101
JL352-1	25050267	NSCT-3P95
	Plugs	
P302	25055137	NPLG-7P121
P501	25055133	NPLG-3P117

DISPLAY LED PC BOARD (NADIS-2992-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D301	225142	SEL2913K, LED
D302~D308	225137DG or	SEL2413E DG, LED or
	225137DY or	SEL2413E DY, LED or
	225137CG or	SEL2413E CG, LED or
	225137CY	SEL2413E CY, LED
	Plug	
P303	25055190	NPLG-9P174
	Holder	
	27190531	(LED-8)

POWER SWITCH PC BOARD (NASW-2993-1A)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switch	
S901	25035398	NPS-111-L362P
	Capacitor	
C991	3500065A	0.01μF, AC400V/125V, (IS)
	Fuse holders	
F902a	25050065	YSH403T

EQUALIZER CIRCUIT PC BOARD (NAAF-2994-1A)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	IC	
Q105	222570	NJM4560DX
	Transistors	
Q101~Q104	2212185 or 2212186	2SK170 GR or 2SK170 BL
	Coils	
L101, L102	231133	NCH-1188
L301, L302	231069A	NCH-1119
	Capacitors	
C101, C102	372121814	180pF, 50V, Styrene
C105, C106	372122714	270pF, 50V, Styrene
C107, C108	372121014	100pF, 50V, Styrene
C109, C110	379122225	2200pF, 50V, Film (DEW)
C111, C112	379122234	0.022μF, 50V, Film (DEW)
C113, C114	379121834	0.018μF, 50V, Film (DEW)
C115, C116	379124734	0.047μF, 50V, Film (DEW)
C117, C118	391222227	2200μF, 6.3V, Elect.(MUSE)
C119, C120	39280227	2.2μF, 50V, Elect.(MUSE)
C121, C122	379121225	1200 pF, 50V, Film (DEW)
C123, C124 C129	372121024	1000pF, 50V, Styrene
C131, C132	354754719	470μF, 25V, Elect.
C371, C372, C397, C398	372121014	100pF, 50V, Styrene
	Terminals	
P191	25045218	NPJ-4PDBL-96
P395	25045180	NPJ-2PDBL70
	Plugs	
P101, P102, P301	25055133	NPLG-3P117
	Socket	
JL104, JL360	25050267	NSCT-3P95

VOLUME CONTROL PC BOARD (NAAF-2995-1)-PARTS LIST

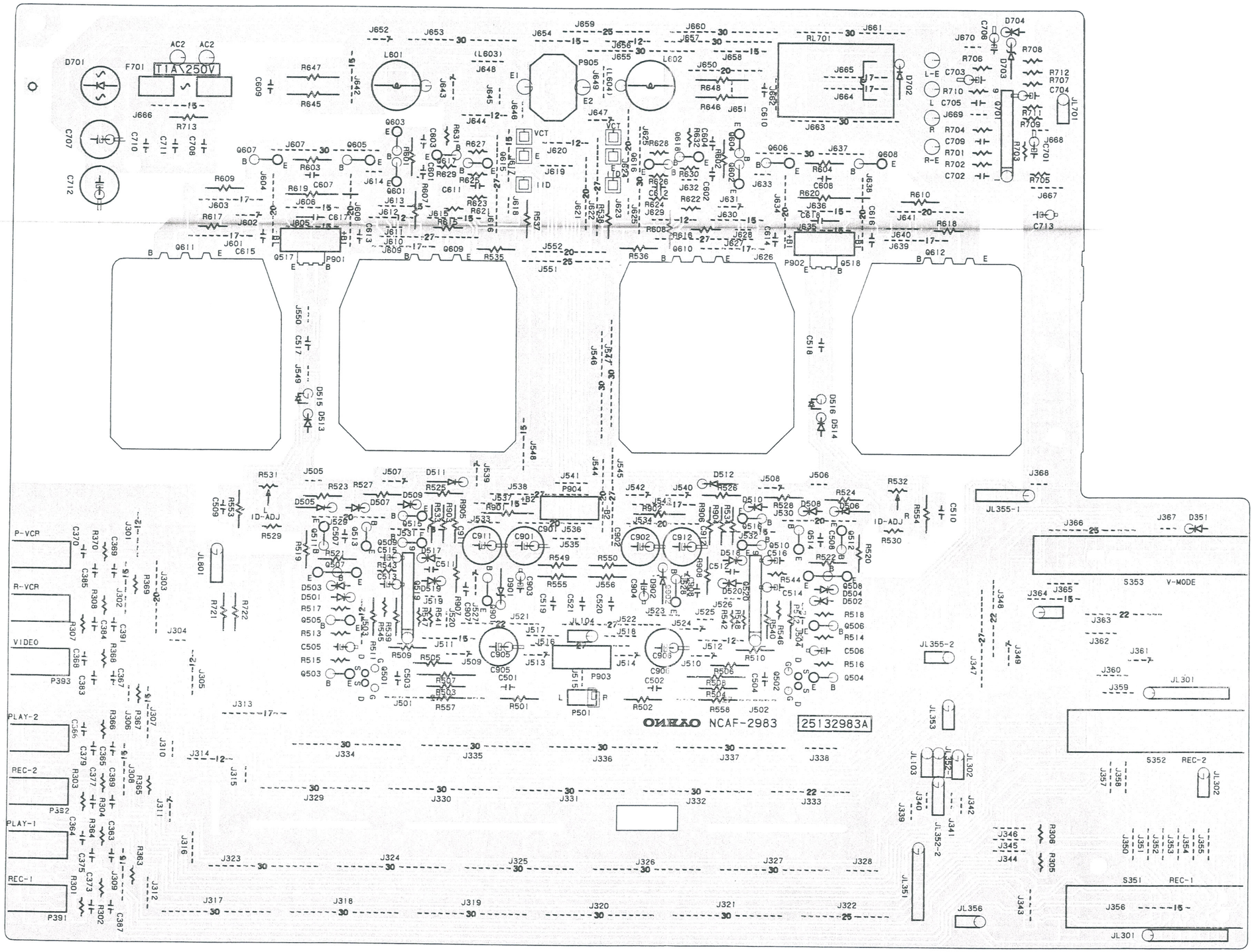
CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R361	5144004	N16RQM100KBT100KBT25, Variable
	Socket	
P302	2000622A	NSAS-14P578

VIDEO TERMINAL PC BOARD (NAETC-2996-1)-PARTS LIST

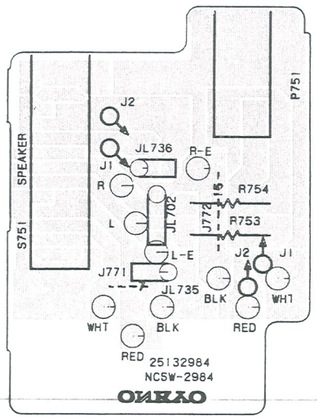
CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D801, D802	223145	1S2076TD
	Relays	
RL801, RL802	25065298	NRL-1P1A-DC12-40
	Socket	
JL801	25050268	NSCT-4P96
	Terminal	
	25045207	NPJ-4PDBL87

PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

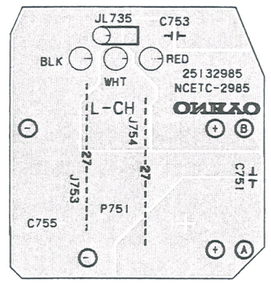
NAAF-2983



NASW-2984



NAETC-2985



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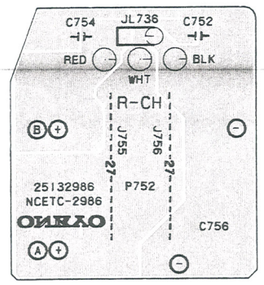
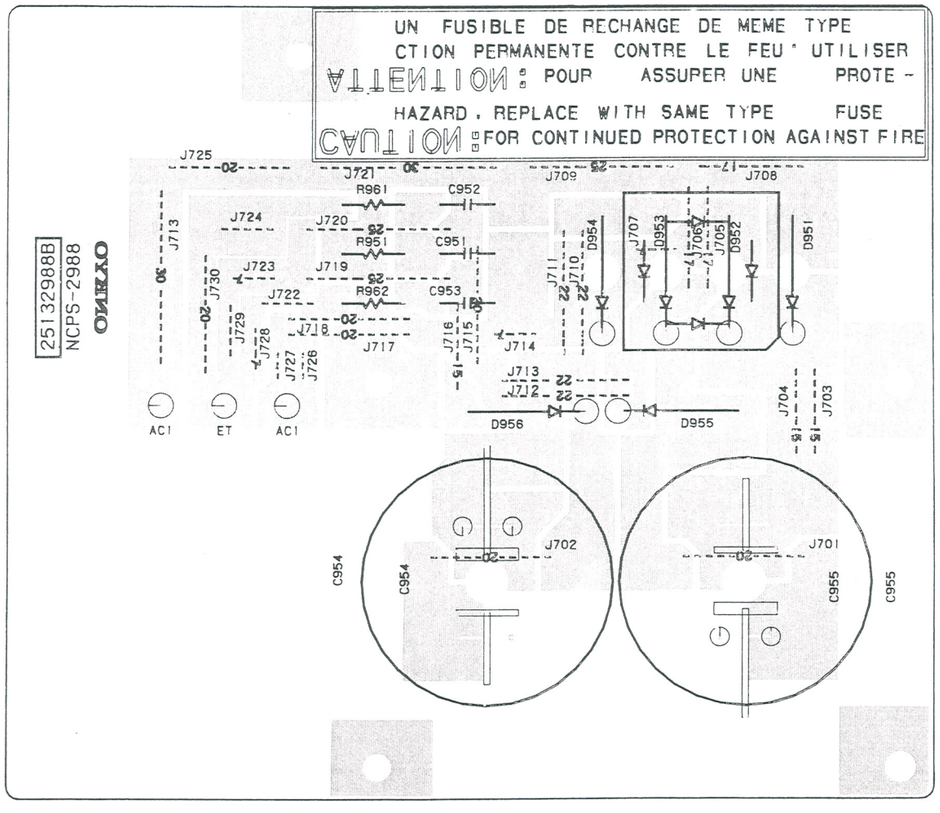
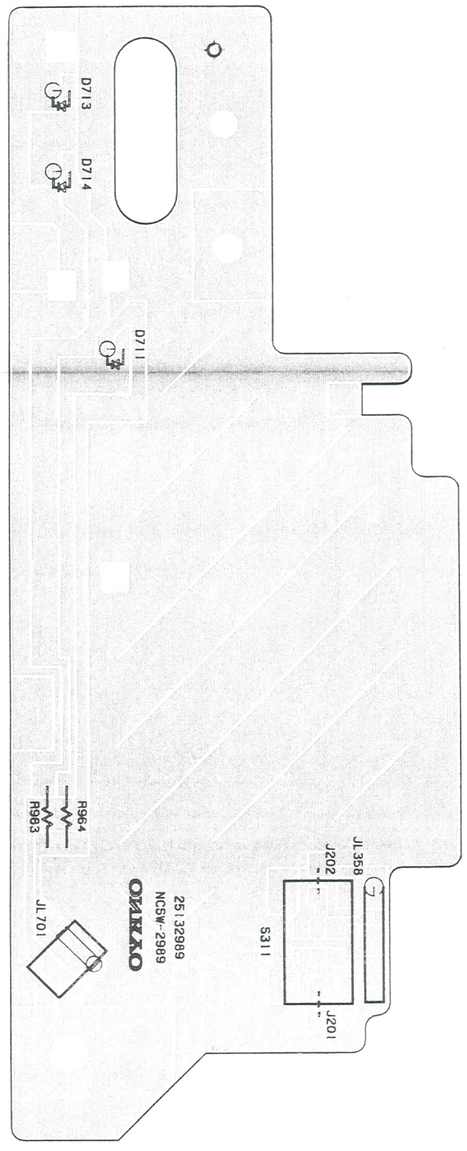


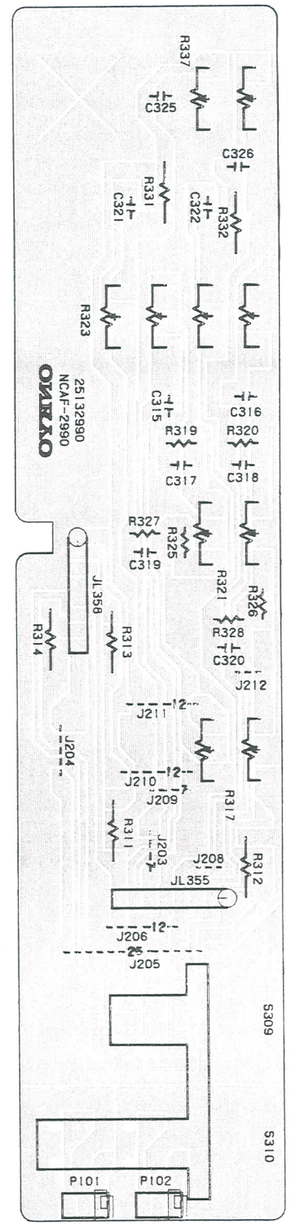
NAPS-2988



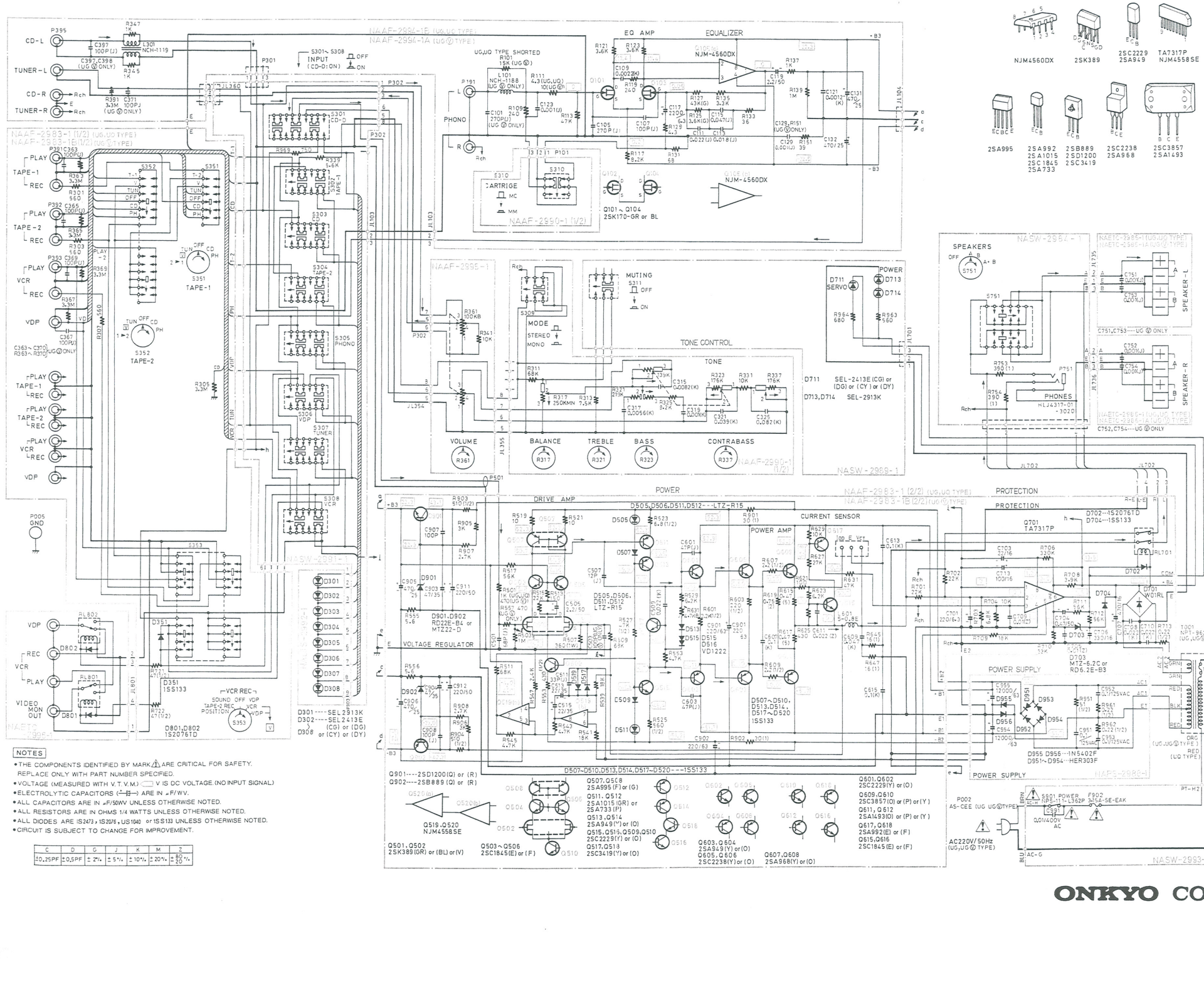
NASW-2989



NAAF-2990



SCHEMATIC DIAGRAM



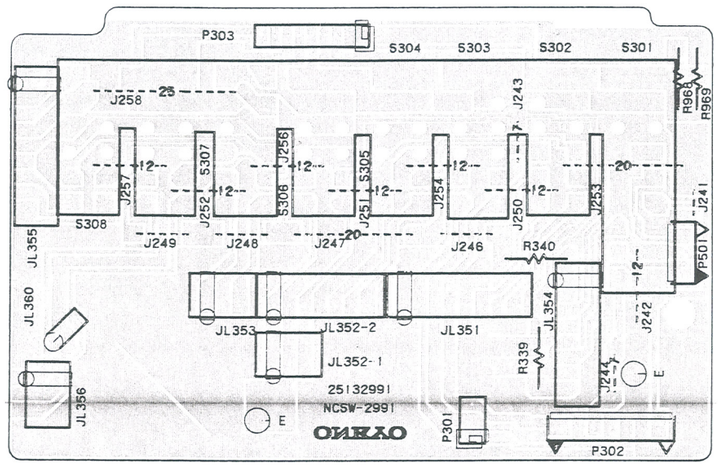
NOTES

- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH V.T.V.M.) ▭ V IS DC VOLTAGE (NO INPUT SIGNAL)
- ELECTROLYTIC CAPACITORS (⊣⊢) ARE IN μF/WV.
- ALL CAPACITORS ARE IN μF/50WV UNLESS OTHERWISE NOTED.
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- ALL DIODES ARE IS2473, IS2076, US1040 or 1SS133 UNLESS OTHERWISE NOTED.
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

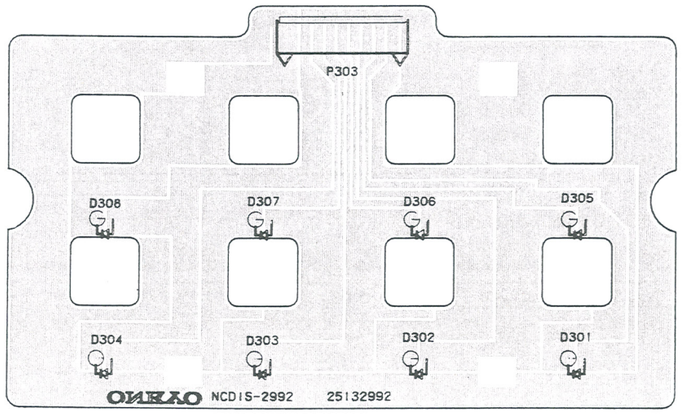
C	D	G	J	K	M	Z
±0.25PF	±0.5PF	± 2%	± 5%	± 10%	± 20%	+80 −20 %

ONKYO CORPORATION

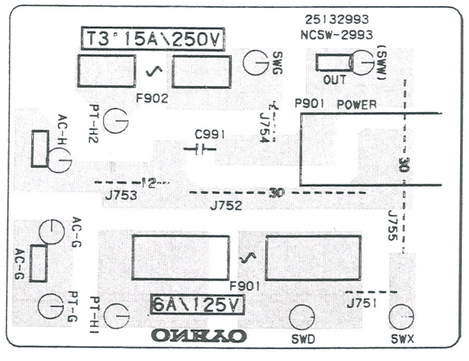
NASW-2991



NADIS-2992



NASW-2993



NAAF-2994